CLAIMS

1.   Process for improving a fingerprint image comprising at least the stages of:

-       normalisation of the initial image;

-       determination of the useful zone of the image;

and characterised by the fact that it comprises in addition successive stages of:

-       cutting of the image into a plurality of blocks;

-       calculation of the FFT of each block;

-       determination of the frequencies of the image blocks based on the aforementioned FFT;

-       application of Gabor filters of parameters determined by the aforementioned frequencies;

-       determination of the orientations of the image based on the filtered images derived from the preceding stage.

2.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the aforementioned blocks comprise overlapping zones.

3.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the aforementioned frequencies of the blocks are determined by the highest frequency in a higher energy frequency band.

4.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the aforementioned stage of determining frequencies of the image blocks additionally comprises a stage of evaluating the relevance of the calculation of the values of the aforementioned frequencies.

5.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the aforementioned stage of determination of the orientations of the image comprises additionally a stage of evaluation of the relevance of calculation of the values of the aforementioned orientations.

6.   Process for improving a fingerprint image according to claim 4, characterised by the fact that in case of irrelevance of one of the aforementioned frequencies, the aforementioned frequency is recalculated based on a function of the initial FFT.

7.   Process for improving a fingerprint image according to claim 6, characterised by the fact that the irrelevance of one of the aforementioned frequencies is assessed in relation to a predetermined threshold.

8.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the aforementioned Gabor filters have as orientation parameters $0°$, $22.5°$, $45°$, $67.5°$, $90°$, $112.5°$, $135°$ and $157.5°$.

9.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the aforementioned stage of determining orientations comprises the stages consisting in:

-       reconstituting images based on the aforementioned Gabor filtering of the aforementioned blocks;

-       calculating the average intensity of each filtered image for zones of a predetermined size;

-       creating a new image of orientations containing the orientation of the block of the highest intensity;

-       creating a new quality image containing the intensity of the block of the highest intensity;

-       filtering of the aforementioned image of the orientations.

10.   Process for improving a fingerprint image according to claim 1, characterised by the fact that the process additionally comprises stages of creation of a merged final image based on the aforementioned orientations and binarisation and skeletonisation of the aforementioned merged final image.